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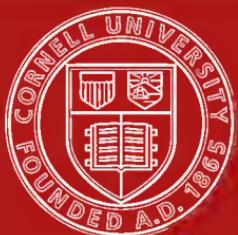
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# Ottawa Horticultural Society

## BULLETIN NO. 2

### Bulb Culture for the Amateur

BY

W. T. MACOUN AND R. B. WHYTE

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OTTAWA, ONT. CANADA

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AUGUST 1904

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NEW YORK STATE  
COLLEGE OF AGRICULTURE,  
DEPARTMENT OF HORTICULTURE,  
CORNELL UNIVERSITY,  
ITHACA, N. Y.

PRICE, 10 CTS.

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PHOTO BY  
FRANK T. SHOTT

"FREESIA REFRACTA ALBA"  
(GROWN IN THE DWELLING HOUSE)



# BULB CULTURE FOR THE AMATEUR

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There is no time of the year when flowers are as much appreciated in the garden as in the spring, and there is no time when they are valued as highly indoors as from Christmas until spring; hence, anything that will give abundant bloom and attractive flowers, at a minimum cost, at these seasons, should be exceedingly popular. Bulbs will do this, and lovers of flowers in Canada are planting them in increasing numbers yearly.

In order that the members of the Ottawa Horticultural Society, and others also, might have as much information as possible regarding the culture of bulbs, and the best varieties to grow, a Committee was appointed by the Directors of the Society, last winter, to prepare a bulletin on the subject, and after careful preparation, this Committee has much pleasure in presenting the results of its labours.

The aim has been to give the information in as practical a form as possible, and it is hoped that members of the Society who follow the directions given will find the results satisfactory.

## Spring and Winter Flowering Bulbs.

From the time when the first bare ground permits the dainty Snowdrop to show its welcome head, until the end of May, when the last of the gorgeous Cottage Tulips close the display of spring bulbs, there is a constant succession of lovely flowers, for closely following the Snowdrops are the Crocuses and Scillas, then the Hyacinths, and Narcissus in great variety.

While the varieties of Narcissus are still in their prime, the early Tulips begin to bloom, and these, with their brilliant colour, make a delightful contrast with the Narcissus. By having a good assortment of Tulips, flowers may be had throughout the month of May, as later blooming varieties keep up a constant succession.

Although the Darwin Tulip has been deservedly popular as a late class, it has a keen rival in the so-called Cottage Tulips, which are more brilliant in colour, and also more graceful. In this bulletin will be found a list of some of the best of the Cottage Tulips which have been tested at Ottawa, and they are strongly recommended for planting.

Not only can a succession of flowering bulbs be had in the garden, from the time the snow melts until June, but in the home, by judicious selection and care, flowers can be obtained from the end of November until the spring, with the Chinese Sacred Lily, Paper White Narcissus, Roman Hyacinths, Freesias, Narcissus, Hyacinths and Tulips, which may be forced in the order given.

Space will not permit of treating of the summer-flowering bulbs in this bulletin, and even some of the less common spring-flowering bulbs have been omitted for the same reason.

## What Bulbs are and What they may be Expected to do.

In order that one who grows bulbs, or intends to do so, may get the best results, he should know what bulbs are, and what they may be expected to do if treated in the right way. The bulbs recommended in this bulletin may be briefly described as fleshy, under-ground buds, from which roots develop in autumn, and leaves and flowers in spring. Most of the bulbous plants mentioned here are grown in Holland, and hence are known as Dutch bulbs, although they are now being grown commercially in England, Ireland, and the United States—some of them are grown in France. These bulbs make rapid growth in early spring, produce leaves and flowers, and die down; the roots wither up, and the bulbs become dormant, after which they are dug, cleaned and prepared for shipment. During their period of growth the flowers for the next season are formed in the bulb, and sufficient food and energy are stored up in it to cause rapid development when the proper time and conditions come. Knowing that the flowers are already formed in the bulbs before they are planted, the person who proposes either to grow them in the garden or pot them for the house can easily understand that large, well-developed bulbs are likely to give better flowers than small ones, and when ordering, this should be taken into consideration. No amount of care or high culture can add any more blooms to a hyacinth spike than were formed when the bulb was growing in Holland.

## GARDEN CULTURE.

**Soil.**—Most of the hardy spring-flowering bulbs thrive best in well-drained, loamy soil, with a tendency to sandy loam; in fact all the bulbs described in this bulletin will succeed well in such soil. In preparing the soil, which should be dug to a depth of 12 to 15 inches, well-rotted manure should be thoroughly incorporated with it to get the best results, but it is preferable to apply it the spring before planting, or if put on in the fall, it should be buried deep enough to prevent it coming in contact with the bulb. Pure manure, when it comes in contact with the

bulbs, sometimes causes them to rot, or to become diseased. The advantage of having soil which is thoroughly drained is well shown after a wet season, when Tulips especially, frequently rot badly in the soil when it remains wet for a long time. This rotting of bulbs in the soil has caused the recommendation to be made of lifting Tulips, drying them off, and replanting them again in the autumn. This advice is good, but it is not necessary where the soil is suitable. This matter, however, will be referred to in the following pages.

**Planting.**—Although the bulb when bought has the future flower and considerable energy stored up in it, this energy will not be exerted to the full unless the conditions are made favourable, and this is brought about by the development of a good root system to furnish moisture and some plant food, but especially the former. In order to get a good root system, the bulbs should be planted early enough to give the roots time to develop before winter. Failure in having good flowers in the spring is often due to the fact that the bulbs have too few roots. By planting during the latter part of September and early October, bulbs will have ample time to get well rooted before winter, but if through some cause planting is delayed until shortly before winter sets in, a heavy mulch of straw, or strawy manure or leaves, should be placed over the surface of the ground to prevent freezing, and to permit the roots to go on developing until well into winter.

Tulips, Narcissus and Hyacinths should be planted from four to six inches deep, to the bottom of the bulb, and about the same distance apart, while the smaller bulbs, such as Snowdrops, Crocuses, and Squills, may be planted about two inches apart, and from two to three inches deep. If the soil is clayey, or if there is manure in the soil which is not thoroughly mixed with it, it is advisable to put a little sand under each bulb, which will prevent rotting.

Single rows should be avoided in planting bulbs, as they are much more effective in masses or groups. Tulips and Hyacinths are usually planted in beds in large masses, their place being taken by annuals later on. They can be used with good effect, however, in small clumps in the perennial border, and make a fine show in the spring before many of the perennials are in bloom. Planted in this way, there need be no large bare places in the border without bloom after the bulbs have done flowering.

**Winter Protection.**—Not only is a mulch of straw, or strawy manure, or leaves, useful for keeping out frost to permit root development, but it is necessary in this cold climate to give the

bulbs some protection from the changes of temperature in winter which, if there is no snow on the ground, often do more harm than intense cold, as they cause a heaving of the bulbs, which breaks the roots from the bulbs with the result that the flowers are very unsatisfactory. The mulch should be gradually removed as soon as the snow goes in the spring, as Tulips make such early and rapid growth that they may be broken in removing it, if left longer.

## TULIPS

**Culture.**—The Tulip is unrivalled among hardy spring flowers for brilliancy and variety of colour, and for this reason, and because of the ease of culture and low price of the bulbs, it has been planted more largely than any other. No bulb is as satisfactory for bedding as the Tulip, as the bright colors and strong contrasts are most effective. If Tulips are in suitable soil they may be left undisturbed for three or four years, or until they get too crowded to produce good flowers, or have died out so much that they need to be replaced; but as a rule, the best flowers are obtained by planting new bulbs each year, and this is almost a necessity for show beds to ensure perfect satisfaction, and for this purpose, it is important to use varieties which bloom at the same time, and the heights of which are known. As soon as the petals have fallen, the seed pods should be removed, in order to conserve the energy of the plant, which would be used in developing seeds instead of the bulb, but the stem and leaves should not be cut until they have dried up as they are necessary to the proper maturing of the bulb. As soon as the stems and leaves have died, the bulbs may be dug up, cleaned, and kept dry until autumn, or if the bed is needed for annuals, they may be dug up shortly after they have done flowering, and heeled-in in a partly shaded place, so that they will dry up gradually, in order to get them as mature as possible. Annuals may be planted over, and between, the bulbs in the beds, or in the border, without injury to the bulbs.

**Varieties.**—There are hundreds of named varieties of Tulips which are recommended for planting outside, but the following kinds have been found by the writers to be the most beautiful and reliable of the many kinds tested. These varieties vary greatly in height, and this point should be studied when arranging them in the bed or border. They also have a blooming period of about four weeks, usually beginning early in May, and it is important to have a number of varieties, so that there will be an uninterrupted succession of flowers; hence, those recommended are divided into several groups in order to aid the intending planter: Early Single, Late Single, Early Double, Late Double, Parrot Tulip, Darwin Tulip, Bizarres, Byblooms.

## TULIPS FOR BEDDING OR THE GARDEN.

### EARLY SINGLE TULIPS.

CHRYSOLORA.—Height, 11 inches. Golden yellow.

KEIZERSKROON.—14 inches. Crimson-scarlet, with broad yellow margin.

JOOST VAN VONDEL.—10 inches. Crimson, flaked with white; large flowers.

JOOST VAN VONDEL (white)—10 inches; pure white; large flowers.

PROSERPINE.—12 inches. Rich rosy carmine.

VERMILION BRILLIANT.—10 inches. Bright vermillion.

COULEUR DE CARDINAL.—11 inches. Bronze-scarlet.

COTTAGE MAID.—9 inches. White, bordered with rosy pink.

DUCHESSE DE PARMA.—13 inches. Orange red, with broad yellow edge.

THOMAS MOORE.—14 inches. Orange; sweet scented.

VAN DER NEER.—10 inches. Violet.

STANDARD SILVER.—10 inches. White, feathered with crimson.

### LATE SINGLE TULIPS.

RETROFLEXA.—Medium height. Pure yellow; reflexed petals; graceful.

MACROSPEILA.—Medium height. Brilliant scarlet, with black and yellow base; sweet scented.

FULGENS.—Tall. Crimson-scarlet with yellow base.

GOLDEN CROWN.—Medium height. Golden-yellow. edged with crimson.

SNOWDON (LE CANDEUR).—Medium height; pure white, becoming suffused with pink.

PARISIAN YELLOW.—Tall. Bright yellow; pointed petals; graceful.

LA PANACHEE.—Medium height. Cherry crimson, flaked with white; variegated foliage.

PICOTEE.—Tall. Waxy-white, with faint pink edge.

GOLDFLAKE.—Tall. Bright orange-scarlet, flaked with yellow; sweet scented.

SPATHULATA.—Tall. Rich crimson scarlet, blue-black base.

MAID OF HOLLAND.—Medium height. Cherry-red, striped with yellow; sweet scented.

YORK AND LANCASTER (Shandon Bells).—Medium height. White, with a deep margin of rose.

## EARLY DOUBLE TULIPS.

ALBA MAXIMA.—Medium height. Pure white.

COURONNE d'OR.—Medium height. Orange-yellow.

HELIANTHUS.—Medium height. Red and yellow.

IMPERATOR RUBRORUM.—Medium height. Crimson-scarlet.

MURILLO.—Medium height. Blush pink.

PURPLE CROWN.—Medium height. Purplish-red.

## LATE DOUBLE TULIPS.

MARIAGE DE MA FILLE.—Tall. White, feathered with cherry-crimson.

ROSE POMPON.—Medium height. Pale yellow, well flaked with pink.

YELLOW ROSE.—Medium height. Golden yellow; sweet scented.

PAEONY ROSE.—Medium height. Scarlet.

OVERWINNER (Belle Alliance).—Medium height. Blue-violet, feathered with white.

ADMIRAL KINSBERGEN.—Medium height. Brownish-violet.

## PARROT TULIPS.

CRAMOISIE BRILLIANT.—Medium height. Deep crimson.

LUTEA MAJOR.—Medium height. Golden-yellow.

PERFECTA.—Medium height. Yellow, feathered with scarlet.

DARWIN TULIPS.—Mixed.

BIZARRES.—Mixed.

BYBLOOMS.—Mixed.

## NARCISSUS.

The Narcissus is not nearly as well known in Ottawa, or, in fact, in Canada, as the Tulip. This may be due to the fact that many persons think that it is not very hardy. It is certainly not because it lacks beauty, as there is no spring flower which has the breath of spring so much about it as the Narcissus, nor is there any which is more delicate, chaste and graceful. If the proper varieties are chosen, they will be found as hardy as Tulips, and some of them multiply even more rapidly. The blooming season of the Narcissus is about as long as the Tulip, but early varieties begin to bloom from one to two weeks sooner, the first flowers usually being out during the last week of April. Narcissus bulbs should be left undisturbed in the ground as long as they continue to produce good flowers, and

most of the varieties recommended will do so for five years, or even longer. If it is desired to increase the clumps or to make new ones, they may be dug after a few years, and the bulbs separated and given more room, when they will multiply again with renewed vigour.

There are many hardy varieties of *Narcissus*, but in the following list a few of the best only are given, in order to avoid confusion. Once the desire to plant the *Narcissus* is aroused, by seeing the very best, other kinds may be obtained. The six varieties recommended increase from year to year, some of them much more than others.

In the following list the varieties are arranged, approximately, in order of blooming, but some bloom almost or quite at the same time. By planting all the varieties recommended, there will be a blooming season of from four to five weeks.

### *Narcissus* for the Garden—In Order of Blooming.

**EMPEROR.**—Large trumpet. Yellow.

**HORSEFIELDI.**—White perianth and yellow trumpet.

**SIR WATKIN.**—Sulphur-yellow petals, large yellow cup, tinged with orange; sweet scented.

**BARRI CONSPICUUS.**—Pale-yellow petals; cup orange-scarlet; sweet scented.

**POETICUS ORNATUS.**—Perianth pure white; cup margined with scarlet; sweet scented.

**POETICUS.**—Perianth pure white; cup orange scarlet.

Other good varieties are:—

**BICOLOR GRANDIS, ALBICANS, WM. P. MILNER, MINNIE HUME.**

The following varieties are less hardy, and need to be replaced from time to time. They are, however, cheaper, and owing to their great beauty, are well worthy of cultivation:—

**OBVALLARIS, GOLDEN SPUR, PRINCEPS, VANSION (double), SULPHUR PHOENIX.**

### HYACINTHS.

The Hyacinth is not used for bedding purposes as much as the Tulip, as it is not quite as reliable, but a good bed of Hyacinths is a very pleasing sight in early spring. The colours of the Hyacinth are so delicate, and the perfume so sweet, that it well deserves the popularity which it enjoys. For bedding purposes, new Hyacinth bulbs should be purchased every year, as the climate in Canada is not favorable to the development of

bulbs which will throw a good spike of flowers. In the garden the bulbs may be left in the ground from year to year, where they will often increase, and furnish a good supply of bloom, even though the spikes are not of the largest size. Hyacinths are not as hardy as either Tulips or Narcissus, and beds should be mulched in the autumn without fail.

The following varieties have been found the most satisfactory for planting outside :—

### Hyacinths for Bedding or the Garden.

#### SINGLE PINK AND ROSE.

CHARLES DICKENS.—Rosy-pink.

GIGANTEA.—Blush-pink, large spike.

NORMA.—Fine rosy-pink, large bells.

SARAH BERNHARDT.—Deep rose.

#### SINGLE RED.

GENERAL PELISSIER.—Deep crimson.

LORD MACAULAY.—Rose, with carmine stripes.

#### SINGLE WHITE.

ALBA SUPERBISSIMA.—Pure white, large spike.

LA GRANDESSE.—Pure white. The best white.

QUEEN VICTORIA.—Pure white.

#### SINGLE BLUE.

LA PEYROUSE.—Fine porcelain-blue.

GRAND MAITRE.—Deep porcelain-blue.

KING OF THE BLUES.—Deep glossy blue.

### MISCELLANEOUS BULBS.

There are a number of beautiful, interesting hardy spring flowering bulbs in addition to the Tulip, Narcissus and Hyacinth, but it is only possible in this bulletin to refer to some of the best of them.

**Snowdrops.**—There is first of all the Snowdrop which, as the earliest flower of spring, is very popular and being quite cheap can be procured by everybody. The species known as

**Galanthus Elwesii** is the most satisfactory. It is desirable to plant the Snowdrop in a spot where the snow goes off early so that the flowers may be obtained as soon as possible. These bulbs should not be planted more than two inches apart if an effective display is desired.

**Crocus.**—The Crocus is a gayly coloured little flower which blooms soon after the Snowdrop. The bulbs should be planted in masses in the border or around the trees or shrubs. The effect is also very pleasing if they are planted in the lawn, a small piece of sod being cut and raised, and a small hole made for the bulb and the sod replaced. In the spring the Crocus will thrust its way through the grass and bloom well, and by the time the grass is cut first the blooming season will be about over.

**Scillas or Squills.**—These little flowers are very striking in early spring owing to their intense blue colour, and as the bulbs are very cheap they should be in every garden. The species known as **Scilla sibirica** is the most satisfactory, although **Scilla bifolia** is also good. Late in May, **Scilla campanulata** blooms, and as it is at a time when the spring bulbs are nearly over, it is much appreciated. It is a larger growing plant than the early flowering species, but although it is quite attractive, the flowers are of a duller blue than the others. There is a white variety, **Scilla campanulata alba**, which should be planted for contrast.

**Chianodoxa** (Glory of the Snow).—This is another graceful and pretty early spring flowering bulb closely related to the Scilla, and is very desirable. It may be grown like the Crocus in the lawn with very good results. The species **Chianodoxa Luciliae** is the one usually planted, but the flowers of **Gigantea** are larger.

**Grape Hyacinths (Muscari).**—The Grape Hyacinths the hardy, graceful little bulbs, and as they are very cheap, everyone who loves flowers should have some. The blue and the white varieties make a striking contrast when growing together.

**Fritillarias.**—There are two species of Fritillarias which are grown more largely than others, namely, **Fritillaria imperialis**—Crown Imperial—and the Guinea Hen Flower or Common Fritillaria,—**Fritillaria Meleagris**. The Crown Imperial is a great surprise in plant development in the spring. As soon as the snow is off the ground it is seen pushing its sturdy head above ground and within three or four weeks is  $2\frac{1}{2}$  to 3 feet in height, and is very conspicuous, with its cluster of yellow or orange-red flowers. The Common Fritillaria, while not so striking a plant, be-

cause much smaller, is very graceful, and is quite desirable; the white-flowered variety is also attractive. There is a beautiful Siberian species, *F. pallidiflora* with greenish-yellow flowers, a free bloomer, and quite hardy, which should be more generally planted.

## CULTURE OF BULBS INDOORS.

The culture of bulbs indoors is one of the most delightful pastimes in winter, and there is nothing in floriculture which so well repays the lover of flowers for the money invested, and for the time and care spent upon them. By having the right varieties, and by forcing them properly, flowers may be obtained from the latter part of November until spring.

**Soil.**—The mistake has often been made by those who have written on bulb culture for the amateur, that too much stress has been laid on the kind of soil in which the bulbs are to be grown, and definite proportions of sod, manure, leaves and soil have been recommended without giving any alternative to the intended planter. The difficulty in cities of obtaining these ingredients has no doubt deterred many people from growing bulbs who would have done so if it had been made plain to them that they could have good success without preparing the soil in the exact way laid down. As has been stated before, the bulb has within it the future flower, which was formed during the previous spring; it has also food and energy stored up in it ready to be used when the right conditions are brought about, which are: first, moisture and coolness to produce roots, and then sunshine and heat to develop the leaves and flowers. While the bulb does, no doubt, take up plant food from the soil when forced, roots and moisture are of far greater importance. A soil should first of all be porous, so that air is admitted freely to the roots; a soil which becomes compact and hard is the poorest kind. It should also retain water fairly well, and for this reason it is well to have some humus, which is supplied by rotted leaves, rotted manure, or rotted sod. Good, loamy garden soil is quite satisfactory without the addition of any fertilizer, but if it is a soil that becomes compact, it is advisable to add a little coarse sand to make it more porous. Where soil is difficult to get, excellent results have been obtained by using pure building sand for this purpose, which, being coarse, is porous, and does not become compact. This must not, however, become confounded with the ordinary fine sand, which is not satisfactory.

**Planting.**—The bulbs recommended in this bulletin should be planted as soon as received, or not later than the middle of October. As a good root system is very essential, the earlier the bulbs are planted the better, as most bulbs take from six weeks to two months or more to fill the pots with roots. Successive plantings are not recommended, as the bulbs lose vitality the longer they are out of the ground.

Hyacinths succeed best in five-inch pots, or if pans are used, several bulbs may be planted in one pan. Three tulips in a five or six inch pot are very satisfactory. Most of the Narcissus also succeed well with three bulbs in a six-inch pot, but some of the larger bulbs are more satisfactory with one bulb in a five-inch pot. Seven or eight Freesia bulbs may be planted in a six-inch pot with good success, and other small bulbs in the same way.

To plant the bulbs, put a piece, or several pieces, of broken pot or charcoal, or even coal clinkers, in the bottom of the pot for drainage, fill the pot or pan with soil, and shake it down by striking the bottom of the pot against something, but avoid pressing down the soil in the pot before planting the bulb, as if the soil in the lower part of the pot is firm, the bulb will be forced out of the pot when it begins to root. Now, place the bulb or bulbs on the surface of the soil, making certain to have the right side up, and press down until the upper side of the bulb is on a level with the surface of the soil, then firm the soil about each bulb with the fingers, and level the surface. When the bulbs are planted, the soil should only come to within about half an inch of the top of the pot, so that when watering there will be room for a good supply.

**Rooting.**—As the proper rooting of the bulbs is, perhaps, the most important feature in the successful culture of them, a paragraph is devoted to it. The recommendation is frequently made to give the bulbs a thorough watering at the time they are planted, keep them in the cellar or some cool place for six or eight weeks and then begin to force them. This advice, without more explicit directions, has been the means of spoiling thousands of fine blooms. There are hundreds of people in Ottawa and other cities who have no place to put their pots, while the bulbs are rooting, except the coolest part of their cellar, in which is the furnace, which keeps the air as dry almost as upstairs; and even a cool closet is sometimes the best place that can be found. The result is that the amateur, who has not had any previous experience, or who has not learned the cause of previous failures, gives his bulbs a thorough watering, as recommended, and thinks all will be well, and he is led to believe this by seeing the shoots pushing up. When he tries

to force his bulbs, he finds that something has gone wrong, but he does not know what it is. What has really happened? The air of the cellar being dry, the soil in the pots has gradually dried up so that by the end of a couple of weeks or perhaps more, it is apparently quite dry and not suitable for the development of roots, and they do not develop, and perhaps some roots which had started have dried up again. One watering is sufficient where pots can be kept in a cool, moist place, but they should be watered once a week, and if necessary oftener, if they are kept in a dry cellar. The soil should not be kept soaked at first, as bulbs, when in the dormant condition, are likely to rot if kept too wet. The soil should be kept moist, not wet. If through careless planting the bulbs push up when they begin to root, the best plan is to repot them, rather than attempt to push the bulb back into its place. When rooting, the bulbs should be kept in a dark place, between 35 degrees and 40 degrees F., if possible, and if they cannot be kept as cool as that, the lower they are kept above this the better. If kept in a high temperature, growth begins above before there is a good root development, and this is something that should be avoided, if at all possible. Furthermore, unless kept very cool, the bulbs will make too much growth, and it will not be possible to keep them back, and the bloom will be over before the end of the winter.

**Forcing.**—By which is meant growing them in the dwelling house. The beginner in the culture of bulbs is tempted to bring some of his pots upstairs as soon as there are signs of growth, and is usually disappointed when he tries to force or get them to develop quickly—the flowers, when they do open, having little or no stem, and the whole plant a stunted appearance. The trouble is either that too few roots have formed, and when the plant is brought up the top develops more quickly than the roots, and there is not enough moisture taken into the bulb to cause a thrifty growth, or else the bulb is not ready to be forced (for it is not possible to force a Tulip, for instance, for Christmas, even if well rooted), and by the time it should bloom, well the plant is not in condition to produce a good flower. The pot should be nearly full of roots before the bulbs are brought upstairs, and it will take from six weeks to two months to bring this about. To find out whether the bulbs are sufficiently rooted, turn the pot upside down and strike the edge against something, at the same time holding the hand over the bulbs to receive them with the soil attached to them for if the soil is of the right texture, and fairly moist, it and the bulbs will turn out without any difficulty. If roots show well all round the outside of the soil, the bulbs are sufficiently rooted, and the bulbs and soil are put back in the pot without any disturbance of the roots. The number of pots that it is desirable to force

first may now be brought up, and if it is possible to put them at first in a room where the temperature is not much above 50 degrees F., until they begin to grow well, much better results will be obtained than by bringing them into the living room, where there is a temperature of 70 degrees F. or thereabouts. Sunshine is very essential to successful bulb culture, and even if the bulbs are well rooted, they will not do very well unless they have plenty of sunshine while they are being forced, especially in the early part of the winter, as later on, when it is difficult, if not impossible, to keep the bulbs from growing in the cellar, they may be left there until the buds are well developed, when, if they are exposed to light for a few days, they will flower quite satisfactorily. As soon as the bulbs begin to grow well, they should be kept well watered; in fact, the soil should be soaked most of the time, while at first, when they are making little growth, it is not necessary nor advisable to give them so much water. There are no plants which respond better than bulbs to a liberal supply of water when they are growing well.

Flowers will last about twice as long in a cool room as they will in a warm one. Individual flowers will stay in good condition for ten days and more if the room is cool. The order of forcing the bulbs recommended for the house is: Freesia, Chinese Sacred Lily, Paper White Narcissus, Roman Hyacinth, Narcissus, Dutch Hyacinth, Tulip.

A few notes are herewith given regarding the different kinds of bulbs, and any special method of culture for them, with the list of varieties recommended.

## HYACINTHS.

Hyacinths are very popular for forcing, this being partly due to the fact that they force easily, and partly because they are sweet scented and very attractive. The Roman Hyacinth is one of the easiest bulbs to bloom in the house, and may be had in flower by the first of December if planted early. The single, white-flowered variety is much the most satisfactory. It is very graceful, and has a delicate perfume. The earliest of the Dutch Hyacinths will not bloom satisfactorily before the middle of January, and it will be found unsatisfactory to try and get them to do so. They should be well rooted before bringing up. Hyacinths may also be forced in water, and Hyacinth glasses may be obtained especially for this purpose. The bulb rests near the top of the glass, enough water being kept in the latter so that the bottom of the bulb is just touching it. The bulbs should be kept in a dark, cool place until they have

thrown out roots, when they may be brought up and forced as in the soil. It is not necessary to change the water, but it is important to keep the glass well filled with it. A piece of charcoal is useful in keeping the water pure, but it is not actually necessary. Forcing in glasses is not as satisfactory as forcing in pots, and it is not recommended for the beginner in bulb culture.

Some varieties force sooner than others, and these will be found in the following list:—

### Hyacinths For Forcing

There are many good Hyacinths which are almost equal in merit; the following twelve good varieties are recommended, as they can be easily obtained:—

#### SINGLE PINK.

CHARLES DICKENS.—Rosy-pink.

BARON VON THUYLL.—Fine pink.

GIGANTEA.—Blush-pink; large spikes.

#### SINGLE RED.

GENERAL PELISSIER.—Deep crimson; early.

LORD MACAULAY.—Rose, with carmine stripes.

#### SINGLE BLUE.

BLONDIN.—Porcelain-blue; large bells.

QUEEN OF THE BLUES.—Light silvery-blue.

GRAND LILAS.—Fine porcelain-blue; large spike. The best blue.

KING OF THE BLUES.—Deep, glossy blue.

#### SINGLE WHITE.

BARONESS VAN THUYLL.—Fine white; compact spike; early.

ALBERTINE.—Pure white; early.

LA GRANDESSE.—Pure white. The best white.

### NARCISSUS

The Narcissus is a very easy bulb to force, and this is especially true of the so-called Chinese Sacred Lily and the Paper White Narcissus, which may be had in bloom during the last days of November, or early in December, and may be

forced more quickly than others. They root readily after planting, and need not be kept as long in the cellar as most bulbs. In fact, the Chinese Sacred Lily may be forced as soon as potted. They need plenty of water. Double Van Sion, Trumpet Major and Golden Spur force sooner than some of the others, and may be brought up in the order named. Good flowers may be produced by the latter part of January.

Narcissus poeticus and its varieties are more difficult to force than most others, and if tried, should be kept back as long as possible.

Like Tulips and Hyacinths, a good succession of Narcissus blooms may be kept up until spring by having the varieties recommended, and bringing the pots up gradually.

## Narcissus for the House—In Order of Forcing.

### SINGLE.

CHINESE SACRED LILY.—White, with yellow cup.

PAPER WHITE.—Pure white.

TRUMPET MAJOR.—Yellow perianth and trumpet.

GOLDEN SPUR.—Yellow perianth and trumpet.

EMPEROR.—Large trumpet; yellow.

TRUMPET PRINCEPS.—Sulphur-yellow perianth, yellow trumpet.

HORSFIELDI.—White perianth and yellow trumpet.

SIR WATKIN.—Sulphur-yellow petals, large cup, yellow tinged with orange; sweet scented.

BARRI CONSPICUUS.—Pale yellow petals, cup orange-scarlet; sweet scented.

BICOLOR GRANDIS.—White perianth and yellow trumpet.

### DOUBLE.

VAN SION.—Double yellow daffodil.

SULPHUR PHOENIX.—Beautiful creamy-white; sweet scented.

The early variety of the Poet's Narcissus—*Narcissus poeticus ornatus*—may be forced with fair success, but it is necessary to keep the pots in a cool place until late in the winter, and then force gradually. The Jonquils may also be forced easily in the house, and while not as showy as those recommended, are very graceful, and esteemed highly by some on this account. The Campernelle Jonquil is the most satisfactory.

## TULIPS

The amateur usually finds greater difficulty in forcing Tulips than either Hyacinths or Narcissus, the principal reason being that he tries to force them too early, as the Tulip starts to grow early in the pot, and looks as if it should be forced. Tulips should not be brought up to be forced until January, and then they should be forced as gradually as possible. Good flowers need not be expected until February. The pots may be brought up at intervals to get a succession of bloom. Towards spring the bulbs will make considerable growth in the cellar, but one need not be alarmed, as even if the buds are quite large before they are brought up, they will produce fine flowers. Blooms will last longer if the petals are kept from expanding fully, by means of thread tied around the flower. Nearly all the early flowering Tulips force well, and as the Tulips which look best in the garden are just as attractive inside, the garden list of early single Tulips is repeated here, with one exception, experience having shown that these varieties can be successfully forced:—

### Tulips for the House.

#### EARLY SINGLES.

CHRYSOLORA.—Height, 11 inches. Golden yellow.

KEIZERSKROON.—14 inches. Crimson-scarlet, with broad yellow margin.

JOOST VAN VONDEL.—10 inches. Crimson, flaked with white; large flowers.

JOOST VAN VONDEL (White).—10 inches. Pure white; large flowers.

PROSERPINE.—12 inches. Rich rosy carmine.

VERMILION BRILLIANT.—10 inches. Bright vermillion.

LA REINE.—White, becoming delicate pink.

COTTAGE MAID.—9 inches. White, bordered with rosy pink.

DUCHESSE DE PARMA.—13 inches. Orange-red, with broad yellow edge.

THOMAS MOORE.—14 inches. Orange; sweet scented.

VAN DER NEER.—10 inches. Violet.

STANDARD SILVER.—10 inches. White, feathered with crimson.

## EARLY DOUBLES.

COURONNE d'OR.—Orange-yellow.

MURILLO.—Blush-pink.

IMPERATOR RUBRORUM.—Crimson-scarlet.

## FREESIAS

The Freesia is one of the most charming and graceful of the winter flowering bulbs. It has a delightful and penetrating odor, and one flower will scent a whole room. Unlike the other bulbs recommended for winter bloom, the Freesia does not require to be well rooted before forcing. The most satisfactory results are obtained by leaving the bulbs in the cellar for a few days only, until roots begin to push out, and then bring the pots up and force them. They may be even forced with good satisfaction by bringing the pots into a warm room as soon as the bulbs are planted. The soil should not be very wet until they are growing thriftily, for fear of rotting the bulbs.

Many a beginner has thrown out his pot of Freesias in disappointment at no flower buds showing, while had he had patience they would soon have rewarded him with an abundance of bloom. Freesias should be started in August, if the bulbs can be obtained, and even if kept growing steadily no flowers need be expected before the last week of December, unless Bermuda grown bulbs, which can be had early in July, are purchased, when flowers should be produced a little earlier. Six to eight Freesia bulbs in a six-inch pot will make a fine show, and will well reward the patience of the person who cares for them. From a pot of six bulbs, one of the writers had 124 flowers, and these from bulbs forced in an office window. As the plants grow tall before blooming, they should be supported by a wire. A very convenient way is to take a fairly stiff piece of wire, and bend it so that it will encircle the plants, and have a straight piece for pushing into the soil.

## MISCELLANEOUS BULBS FOR THE HOUSE.

There are other bulbs in addition to those mentioned in the foregoing pages which can be forced quite successfully, such as the Crocus, Scilla, Tritelia, &c., &c., but they are of less importance, and most of them require greater care. After one has had experience in growing Hyacinths, Narcissus, Tulips and Freesias, it will be found very interesting to try forcing some of the other bulbs.

## WHAT TO DO WITH BULBS AFTER FORCING

The same bulbs will not force the second time with any satisfaction, and as a rule will prove total failures. An exception, however, must be made for the Freesia, the bulb of which will be found fairly satisfactory for forcing again if ripened gradually. Most hardy bulbs need not, however, be thrown away if one has a garden. If the bulbs are ripened off gradually in the pots after forcing, by discontinuing watering and putting them where they will dry slowly, they may be planted in the autumn, and although the following year there will be little or no bloom, the year after they will usually bloom, especially Tulips and Narcissus. Bulbs which have been forced should not be planted in a prominent place, for sometimes they do not do well. Roman Hyacinths, Chinese Sacred Lily, and Paper White Narcissus, are tender bulbs, and will winter-kill if planted outside; hence, these should be thrown away after forcing.

### NOTES

**Mice.**—Bulbs are often injured in the cellar by mice, they being especially fond of the new shoots of Tulips. If mice prove troublesome, the pots of bulbs should be placed on a swinging shelf, unless the mice can be got rid of at once.

**Earth Worms.**—Some earth worms are usually in the soil used for potting bulbs, and get into the pots. If they prove troublesome during the winter, they may be easily destroyed by watering the bulbs once with lime water, which may be made by putting a little lime—a few ounces being sufficient—into a pail of water, stir well, and when the particles of lime have settled, the lime water is ready for use.

**Aphis.**—Sometimes aphides, or green flies are troublesome on bulbs grown indoors. These can be destroyed by spraying the plants with tobacco water or whale oil soap, the latter in the proportion of 1 lb. to 8 gallons of water.







